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March 30, 2012

By E-Mail (InfoQual@usgs.gov) and First Class Mail

Associate Director
Office of Science Quality and Integrity
U.S. Geological Survey
108 National Center
Reston, VA 20192

Re: *Request for Correction of Information Submitted Under USGS
Information Quality Guidelines*

Publication: *Breault, R.F., 2011, "Concentrations, Loads, and Sources of
Polychlorinated Biphenyls, Neponset River and Neponset River Estuary,
Eastern Massachusetts: U.S. Geological Survey Scientific Investigations
Report 2011-5004, 143 p. (<http://pubs.usgs.gov/sir/2011/5004>)*

Dear Sir or Madam:

On behalf of New Albertson's, Inc. ("New Albertsons"), I write to submit a request for correction of information disseminated by the U.S. Geologic Survey ("USGS"). This request is made pursuant to the USGS Information Quality Guidelines and the Information Quality Guidelines promulgated by the U.S. Department of the Interior and the Office of Management and Budget (67 F.R. 8452) in accordance with Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554).

New Albertsons seeks correction of certain information contained in USGS Scientific Investigations Report 2011-5004, entitled "*Concentrations, Loads, and Sources of Polychlorinated Biphenyls, Neponset River and Neponset River Estuary, Eastern Massachusetts,*" by Robert F. Breault ("Report 2011-5004" or the "Report"), which is available at <http://pubs.usgs.gov/sir/2011/5004>. Report 2011-5004 was prepared by USGS in cooperation with the Massachusetts Department of Fish and Game, Division of Ecological Restoration, Riverways Program. As explained below and in the enclosed technical memorandum, certain statements in Report 2011-5004 should be corrected so that the Report in its entirety will meet USGS's standards for the quality, objectivity, utility and integrity of information disseminated by USGS to the public.

SUGARMAN, ROGERS, BARSHAK & COHEN, P.C.

USGS Office of Science Quality and Integrity

March 30, 2012

Page 2

Report 2011-5004 presents data about the levels of polychlorinated biphenyls (“PCBs”) detected in water, sediment, and fish-tissue samples collected from the Neponset River in Boston, Massachusetts, as well as from Mother Brook, a tributary of the Neponset. In addition, Report 2011-5004 sets forth conclusions regarding the possible sources of PCBs in the Neponset River, based in part on the results of its sampling and analysis and in part on inferences drawn from other information obtained by USGS, including prior studies, select information about historical operations in the area, and certain information provided by third parties. New Albertsons recognizes the importance of USGS’s efforts to assess PCB contamination in the Neponset River and its tributaries, and generally applauds the thoroughness of USGS’s work and the sound approach taken by USGS in conducting its own sampling and analysis.

Unfortunately, however, the generally high quality of the work reflected in Report 2011-5004 is compromised by certain statements in the Report that lack sufficient empirical support. Further, some important conclusions in the Report are based on information of dubious reliability that was developed by a private party with a direct and substantial interest in the ultimate determination of the sources of the PCB contamination at issue.

The USGS Information Quality Guidelines (the “USGS Guidelines”), which apply to Report 2011-5004, require that USGS data collection and research activities be “carried out in a consistent, objective, and replicable manner” aimed at ensuring the quality, objectivity, utility, and integrity of information disseminated to the public. *See* USGS Guidelines, Section III(2); Office of Budget and Management (“OMB”) Guidelines, 67 F.R. 8452 (February 22, 2002) (incorporated by reference in the USGS Guidelines). To be “objective,” information published by USGS must be presented in an “accurate, clear, complete, and unbiased manner,” which requires that information be presented in the proper context, including, among other things, identification of sources of information and supporting data and models, and identification and disclosure of error sources affecting data quality. OMB Guidelines, 67 F.R. at 8459. “Objectivity” also requires that original and supporting data be generated, and analytic results developed, using sound statistical and research methods. *Id.*

The specific bases for New Albertsons’ concerns, along with specific requests for correction of the pertinent statements in the Report, are set forth in the enclosed technical memorandum prepared by Stephen Emsbo-Mattingly, a Senior Scientist at NewFields Environmental Forensics Practice, LLC. New Albertsons incorporates the enclosed technical memorandum in this request for correction of the Report. As detailed in the enclosed memorandum, certain information contained in Report 2011-5004 compromise the objectivity of the Report by introducing bias and creating the potential for a significant misunderstanding about the sources of the PCB contamination at issue by readers of the Report, including regulators, affected stakeholders, the scientific community and the general public. Statements in the Report about “facility #3,” which is a property located on the northern side of Mother Brook on which New Albertsons currently operate a supermarket, are particularly problematic.

SUGARMAN, ROGERS, BARSHAK & COHEN, P.C.

USGS Office of Science Quality and Integrity

March 30, 2012

Page 3

For example, the Report states that facility #3 was a likely historical source of PCBs, apparently based in large part upon a 2007 oral communication with a staff person of an environmental agency who provided information that an oil-like substance inside a pipe uncovered during the excavation of Mother Brook, which was “presumably” connected to facility #3, was found to contain PCBs at a concentration of about 320 mg/kg. (Report, p. 9, ¶ 2.)¹ The referenced information was not developed by Mr. Pyott or his agency, however, but was given to Mr. Pyott by agents of Thomas & Betts Corporation (“T&B”), the owner/operator of an upstream property—referenced as “facility #2” in the Report— which is a known major source of PCB contamination to Mother Brook. T&B selectively took samples from the pipe at facility #3 (without New Albertsons’ knowledge or authorization) and communicated the analytic results it obtained to MassDEP, as part of an advocacy effort aimed at limiting T&B’s own direct responsibility to MassDEP for remediating the affected portion of the Mother Brook stream banks. In light of T&B’s clear vested interest in making a case for the presence of other PCB sources in close proximity to its own facility #2, it is clear that the information about the referenced pipe did not come from a reliable and unbiased source, and it should have been viewed more critically.²

T&B also provided MassDEP with its own PCB congener analyses of soil and sediment samples taken along the Mother Brook banks in the vicinity of facilities #2 and #3 (but *not* from the above-referenced pipe), which was in turn passed on to USGS. However, T&B’s congener analyses, like its pipe data, presents an skewed and ultimately misleading picture, as explained in the enclosed technical comments.³ In short, this portion of the data reflected in Report 2011-5004 cannot be said to have come from a reliable and unbiased source.

¹ The Report states that this information was communicated to USGS by “Chris Poytt [*sic*], U.S. Environmental Protection Agency.” In fact, Christopher Pyott was in 2007, and still is, an employee of the Massachusetts Department of Environmental Protection (“MassDEP”).

² In fact, Haley & Aldrich, Inc. and Commonwealth Tank, Inc., on behalf of New Albertsons, conducted a more thorough investigation of the drainage systems at the property, including the pipe in question, in August 2007, and concluded, following a video survey of the lines in question and a review and analysis of current and historic building plans, that the pipe in question was *not* a source of PCB contamination to Mother Brook or the stream bank of Mother Brook. This work and conclusion is documented in (1) the Report on Immediate Response Action Plan dated September 27, 2007; and (2) the Immediate Response Action Completion Report dated January 29, 2009; both of which were submitted by Haley & Aldrich to MassDEP under RTN 3-27067 and are publicly available. See <http://public.dep.state.ma.us/fileviewer/DefaultScanned.aspx?documentid=5144> and <http://public.dep.state.ma.us/fileviewer/Default.aspx?formdataid=0&documentid=35635>.

³ T&B’s goal of shifting responsibility for the PCB contamination of Mother Brook away from itself and onto New Albertsons is further reflected by the fact that T&B has brought suit in federal court against New Albertsons, as well as other parties, to recover costs of responding to the PCB contamination in and along Mother Brook. See *Thomas & Betts Corporation v. New Albertson’s, Inc., et al.*, Civil Action No. 1:10-cv11947-DPW (D. Mass.)

SUGARMAN, ROGERS, BARSHAK & COHEN, P.C.

USGS Office of Science Quality and Integrity

March 30, 2012

Page 4

Based on the above-referenced information that was developed by T&B and then shared with MassDEP, USGS concluded in Report 2011-5004 that facility #3 was a source of PCBs in Mother Brook. That conclusion is not supported and lacks the scientific rigor that characterizes other parts of the Report. In the interest of promoting accuracy, and in keeping with the strength of the methodology and findings presented elsewhere in the Report, it is imperative to set the record straight with respect to these and the other issues discussed in the enclosed memorandum.

As noted above, New Albertsons has a significant interest in Report 2011-5004 and its subject matter, insofar as New Albertsons has actively participated in the remediation of PCB-contaminated soil and sediment along Mother Brook, and is now engaged in cost recovery litigation brought by T&B relating to the same. The accuracy of USGS's conclusions about the potential sources of the PCBs found in Mother Brook, and about facility #3 in particular, is a matter of considerable concern to New Albertsons. Unsupported conclusions regarding facility #3 as a PCB source expose New Albertsons to the risks of unwarranted adverse regulatory action and litigation consequences, and are likely to engender public misperceptions.

For the foregoing reasons, New Albertsons requests that USGS correct Report 2011-5004 in accordance with the proposed revisions set forth in the enclosed memorandum. The requested corrections are necessary to eliminate significant but unsupported conclusions about facility #3, and to ensure that Report 2011-5004 as a whole meets the applicable quality standards for information promulgated by USGS based on its data collection and research activities.

Please address your response to this information correction request to me, as counsel for New Albertsons, as follows:

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SUGARMAN, ROGERS, BARSHAK & COHEN, P.C.

USGS Office of Science Quality and Integrity

March 30, 2012

Page 5

If you have any questions or would like to discuss any aspect of this information correction request, please let me know. I appreciate your consideration of this request, and look forward to USGS's response.

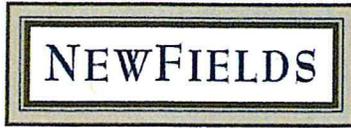
Sincerely,



Lisa Goodheart

Enclosure

cc: Mr. Robert F. Breault, U.S. Geological Survey (w/enc.)
Mr. Tim Purinton, Director, Division of Ecological Restoration, Mass. Dept. of Fish and Game (w/enc.)
Mr. Stephen Emsbo-Mattingly (w/enc.)



March 23, 2012

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RE: Technical Review and Proposed Corrections – *Breault, R.F., 2011, "Concentrations, Loads, and Sources of Polychlorinated Biphenyls, Neponset River and Neponset River Estuary, Eastern Massachusetts: U.S. Geological Survey Scientific Investigations Report 2011-5004, 143 p. (<http://pubs.euqu.gov/sir/2011/5004>)*

Dear Ms. Goodheart:

This technical memorandum provides a review of the document entitled, "Concentrations, loads, and sources of polychlorinated biphenyls, Neponset River, and Neponset River Estuary, Eastern Massachusetts" (Breault, 2011). The USGS published this document as a Scientific Investigations Report (SIR# 2011-5004). This memorandum is organized into three sections: General Comments, Specific Comments and Suggested Revisions to the text of the report.

I. General Comments

It is acknowledged that 1) sediments in Mother Brook, a tributary of the Neponset River, contained elevated polychlorinated biphenyls (PCBs); 2) hurricane-related flooding in 1955 caused dam failures in the Neponset River, which likely released PCB-contaminated sediments further downstream; and 3) the rebuilt dams retained sediments that contain PCBs. However, the report places excessive emphasis on these facts when it attributes the downstream PCB contamination to two specific facilities, identified as facility #2 and facility #3, located adjacent to Mother Brook. There are numerous other sources of PCBs and other contaminants within the Neponset and Charles River watersheds that potentially pose equal or greater threat to human and ecosystem receptors than these two facilities. These other sources of PCBs include a PCB Superfund Site, numerous waste disposal sites, urban runoff, sanitary sewer discharges, atmospheric deposition, and inadvertent spills.

Notably, the report mentions but de-emphasizes two important PCB sources: 1) the Norwood PCB Superfund Site (identified in the report as “facility #1”), which is located on Meadow Brook, an upstream tributary of the Neponset River, and 2) regional combined sewer overflows (CSOs). Soil and sediment samples collected from and by the Norwood PCB Superfund Site contained the highest PCB concentrations within the entire watershed (>25,000 mg/kg in soils and >1,000 mg/kg PCBs in proximal sediments of Meadow Brook [USEPA, 1989; Breault, 2011]). Storm sewers and CSOs also likely contributed significant quantities of PCBs, polycyclic aromatic hydrocarbons (PAHs), pesticides, metals, and nutrients over a long period of time (MADEP, 2002; Durell et al, 2008).

The report de-emphasizes these other PCB sources and non-PCB contaminants without sufficient scientific evidence for doing so. Although not explicitly stated, the USGS investigators apparently assumed that a small number of sediment and PISCES samples adequately represented all of these alternative contaminant sources. Importantly, these samples are not sufficient to represent the historical impacts from the Norwood PCB Superfund Site, CSO discharges, and other sources. A number of these other sources were present before major storms, and the 1955 hurricanes in particular, flushed contaminant-laden sediment downstream through the Neponset River watershed.

In addition, the report places undue emphasis on facility #3, vis-à-vis facility #2, as a potential source of the PCB contamination originating in Mother Brook, without sufficient scientific evidence for doing so. Facility #3 is located immediately downstream of facility #2, and the available data is consistent with the conclusion that it is a location at which PCBs migrating downstream from facility #2 via Mother Brook have come to be located, as opposed to a separate source of PCBs to Mother Brook. The report does not present data sufficient to support the implicit conclusion that facility #3 (including the pipe on the stream bank inside which an oil-like substance was reportedly found in 2007) is an independent source of PCBs. At the same time, the report makes no mention of the available public information that the referenced oily pipe at facility #3 was subsequently investigated and ruled out as a potential historic source of PCBs releases from possible PCB-containing oil circuit breaker manufacturing activities at facility #3 (as this pipe was not even installed until facility #3 was converted to use as a supermarket building in the 1970s). This investigation and conclusion is publicly documented in a Report on Immediate Response Action Plan (Haley & Aldrich, 2007) and an Immediate Response Action Completion Report (Haley & Aldrich, 2009). Given these facts, and especially in light of the substantial referenced documentation of extensive PCB releases at and

from facility #2 (see report at pages 8-9), the report's apparent treatment of facility #2 and facility #3 as separate and comparable potential sources of PCB releases is not justified.

II. Specific Comments

Comment 1. *Abstract (page 1, paragraph 2)*. The report asserts that Mother Brook sediments are the primary source of PCBs in the Neponset River by comparison to background. Background is an important concept for this study, because the concentrations of PCBs in surface water and sediments are typically below, not above, the applicable regulatory standards. The exceedances appear to be within the margin of error for the study. Specifically, the average surface water concentrations are below the EPA chronic freshwater criterion (PCBs < 9.2 ng/L), with the exception of the slight exceedances during the summer months (e.g., the surface water concentrations were greatest [PCBs = 16.5 ng/L] in August). The report lacks a clear discussion of 1) the procedure for defining background for PCBs, PAHs, pesticides, and metals, and 2) the conclusion that PCBs pose a greater threat than pesticides, PAHs, metals, or other urban sediment contaminants (e.g., E. coli, nutrients, and others).

Comment 2. *Abstract (page 1, paragraph 4, sentence 3a)*. Referring to Mother Brook, the report states that "PCBs from this source area likely continued to be released after the flood and during subsequent rebuilding of downstream dams." The report contains little scientific evidence that relates the PCB contamination in sediments behind the downstream dams to specific floods or time periods. The report also fails to point out that major flooding events likely caused the episodic migration to the dam impoundments of contaminated sediment from non-Mother Brook sources throughout the upper Neponset and Charles River watersheds.

Comment 3. *Streamflow, Sediments, and Water Quality in the Neponset River Drainage Basin (page 6, paragraph 2, sentence 2)*. The report states, "As much as one-third of flood flows in the Charles River, which are equivalent to the flow generated from about 60 mi² of drainage area of the Neponset River, are commonly diverted through Mother Brook to prevent flooding in downtown Boston." The Charles River contains elevated concentrations of PCBs (Weiskel, 2007). There is no

discussion in the report of the potential impacts of PCBs from the Charles River on Mother Brook and, in turn, the Neponset River and Neponset River Estuary.

- Comment 4. *Streamflow, Sediments, and Water Quality in the Neponset River Drainage Basin (pages 6- 8, paragraph 5,sentence 4) and Sources of PCBs in the Neponset River Basin (pages 8-9, paragraphs 1 to 3)*. The report correctly acknowledges the presence of both documented and undocumented PCB-contaminated sites throughout the Neponset River basin. However, the report offers little to no discussion of the respective historical impacts of the known PCB-contaminated sites, in terms of the PCBs in sediment retained by downstream dams. The report would benefit from a discussion of the numerous uncertainties affecting the analysis.
- Comment 5. *Study Design (pages 14 to 17)*. The general design involves the comparison of upstream reference samples, midstream source area samples, and downstream drainage area samples. With respect to sediment, the two “upstream” bottom sediment sampling stations in the study are 1) DDY-001 located at an impoundment on Upper Mother Brook and 2) BGY-102 located near the Star Market on the Neponset River above the confluence with Mother Brook (Figure 2 and Table 3). With respect to the surface water samples, there was one additional PISCES sample up- and down-stream of the confluence of the Meadow Brook and Neponset River (Pleasant St and Neponset St, respectively), with no sample actually in the Meadow Brook source area (Figure 3 and Table 3). Despite the limited number of upstream reference samples, the report compares the PCB concentrations in the “upstream” locations with the Mother Brook source area samples and downstream drainage area samples to determine that the source of PCBs in the Neponset River is the Mother Brook tributary.

It is not clear from the report how and to what extent these sampling locations represent historical PCB releases that may exhibit spatially and temporally discontinuous PCB distributions from upstream sources. Specifically, the migration of storm-driven or flood-driven sediments from Meadow Brook and the Charles River may have historically migrated downstream, to and beyond the study’s most “upstream” sediment sampling stations (DDY-001 and BGY-102) to the dams downstream of Mother Brook. The rapid migration of re-suspended sediments during storm and flood events may not have left PCB signatures in the surface

sediment at locations DDY-001 and BGY-102. The absence of sediment sampling locations within Meadow Brook (or even further upstream in the Neponset River beyond the Star Market at BGY-102) and in the Charles River introduces bias to the study design that virtually assures that Mother Brook will be identified as the major PCB source to the dam impoundments in the Neponset River downstream of Mother Brook. This bias undermines the scientific validity of the report's source identification findings.

Comment 6. *PCBs in Sediment (pages 21-22, paragraph 2)*. Bottom-sediment grab samples were measured for 31 elements (e.g., heavy metals) and compared to background concentrations measured in New England rivers, streams, and estuaries. In the sampled river and estuary sediments, element concentrations were generally higher than background concentrations and higher than levels considered toxic to benthic organisms, or bottom-dwelling insects and worms, which form the base of the food chain. This finding is important for two reasons. First, heavy metals may be causing significant risk that may be greater than the risk posed by the presence of PCBs. Second, elevated concentrations of non-PCB contaminants demonstrate the widespread distribution of undocumented releases within the Neponset River watershed. These non-PCB contaminant releases generally co-occur with PCBs as part of the urban runoff signature.

Comment 7. *Relative Abundances, Concentrations, and Root-Mean-Square Difference (RMSD) (pages 31-37)*. The RMSD discussion over-simplifies PCB source identification. It is strongly influenced by the relative abundance of dominant congeners (e.g., PCB-138+163+164) and others, which may simply demonstrate the presence of heavier PCB congeners found in Aroclor (AR) 1254 and AR1260.

Comment 8. *Cluster Analysis (page 38, paragraphs 2 and 3)*. The hierarchical cluster analysis (HCA) discussion is problematic. For example, Cluster 1 is attributed in part to PCBs derived from facility #1, the Norwood PCB Superfund Site, which is adjacent to Meadow Brook. However, this signature is also observed in impounded sediments upstream of the alleged Mother Brook source facilities, which could not be impacted by Meadow Brook based on the hydrological setting (Figure 19a). It is not clear why the cluster analysis is used for source identification, when it cannot distinguish between, and so treats as part of a single cluster, PCBs from sources that are located miles apart in two separate tributaries of the Neponset River.

Comment 9. *Cluster Analysis (page 38, paragraphs 2 to 4)*. The report's assessment of source impacts, and its identification of facility #3, in particular, as a source of "widespread PCB contamination of the downstream parts of Mother Brook, the lower Neponset River, and the Neponset River Estuary" based on the HCA, is oversimplified and erroneous. The HCA identifies two clusters. Cluster 1 is described as the upstream signature (based on samples from Neponset River locations upstream of the confluence with Mother Brook, and from Mother Brook upstream of facility #2). Cluster 2 is identified as the Mother Brook/downstream signature (based on samples from Neponset River locations downstream of the confluence with Mother Brook, and from Mother Brook downstream of facility #2).

Clusters 1 and 2 are misidentified in the form of broad spatial groupings as opposed to compositional patterns. The data in the report indicate that a more accurate naming convention might be:

Cluster 1: Pentachlorobiphenyl and Hexachlorobiphenyl dominated, and
Cluster 2: Trichlorobiphenyl and Tetrachlorobiphenyl dominated.

Figure 1 in this memorandum demonstrates that the chemical signature for Cluster 1 may indicate the presence of AR1254 and/or AR1260 while the chemical signature for Cluster 2 may indicate the presence of AR1016, AR1242, and/or AR1248. The ability of the HCA to identify specific PCB source(s) within the entire sample population is further confounded by environmental weathering. For example, evaporation can make lighter Aroclors, like AR1242, look heavier, like AR1254. Conversely, anaerobic dechlorination can make heavier Aroclors, like AR1254, look lighter, like AR1242. The HCA in this report is only capable of separating samples based on general compositional features potentially attributed several possible Aroclor sources and offers no insight concerning the potential effects of environmental weathering. HCA is poorly suited for identifying specific sources within the watershed.

It must be remembered that Aroclors in the environment have many sources, including, but not limited to electrical equipment, hydraulic fluids, paints, carbonless paper, inks, metallurgical cutting fluids, and lubricants. As these materials weather in the environment, the source attribution can become more

difficult. While electrical equipment was historically manufactured for a period of time at various locations along Mother Brook, PCB-containing materials were used throughout the watershed, especially in industrialized and heavily-developed urban locations. It is only logical that chronic releases of PCBs from industrial, commercial, and residential areas accumulated in downstream sediments. The HCA method in this report only classifies these releases by the presence of heavy (Cluster 1) and light (Cluster 2) congeners, irrespective of the actual source. In short, these clusters are too generic to support the identification of specific point sources.

Comment 10. *History of PCB Contamination in the Neponset River (page 38, paragraph 5, sentence 1).* The report states, "The history of PCB contamination in the Neponset River and its tributaries suggests why the clusters are not based on samples from contiguous stations." The discontinuous nature of downstream sediment impacts recognized in this section of the report calls into question the study design that uses too few samples from upriver locations in the Neponset and Charles Rivers to define background. The upstream samples may reflect modern releases or re-suspended sediments with little or no indication of historical impacts from areas other than Mother Brook.

Comment 11. *Various Conclusory Statements Regarding Facility #3 (see especially pages 9, 34 and 38).* In several places, the reports reflects a selective focus on facility #3 (in the concluding sentence of the Cluster Analysis section and elsewhere), which is not justified by the data. Like many areas in the Neponset Watershed, the Mother Brook tributary is bounded by multiple PCB sources. This report, however, not only selectively focuses on facilities #2 and #3, but also treats them as distinct sources of PCB releases, an assumption which is unjustified and erroneous. Three points warrant consideration here. First, facility #2 has multiple discontinuous soils with AR1016, AR1242, and AR1248 that demonstrate independent releases over time of trichlorobiphenyls and tetrachlorobiphenyls in close proximity to migration pathways to Mother Brook. A careful review of the PCB congener patterns demonstrates that Mother Brook sediments match well the PCB signatures in facility #2 soils, when multiple samples from multiple depths are considered¹. Figure 1 in this memorandum shows a comparison of congener

¹ Along with this congener data, Mr. Pyott provided Mr. Breault with a data-point analysis that had been supplied to him by Shaw Environmental on behalf of Thomas & Betts Corporation (T&B). That analysis

patterns from a USGS sediment sample (BGY-141), a Mother Brook bank sediment sample (MB-M12), and soil boring ADC-420 samples at varying depths taken from Facility #2 (Attachment 1). Figure 1 herein demonstrates that the PCB pattern variability among Mother Brook sediments matches closely the variability among facility #2 soils. Specifically, all of these soil and sediment samples are dominated by tri- and tetra-chlorobiphenyls. The most significant variability occurs within the mono-, di-, and tri-chlorobiphenyl homolog groups and is likely caused by environmental weathering; e.g., evaporation. In short, the PCB patterns among facility #2 soils match the Mother Brook sediments when environmental weathering is considered.

Second, the data for facility #3 does not reflect any significant AR1016, AR1242, or AR1248 releases near migration pathways to Mother Brook. The pipe that is suggested to have been a conduit for PCBs to migrate from facility #3 into Mother Brook, as referenced on page 9, paragraph 2 of the report, is submerged below the surface of Mother Brook, when seasonally flooded, such that PCBs carried by Mother Brook from upstream sources could be caught and collected in the open end of the pipe. In addition, we understand that this pipe was installed in the 1970s when facility #3 was converted to use as a supermarket building, and it was not in existence during any time period when circuit breaker production or other industrial activities involving PCBs may have taken place at facility #3. In other words, that pipe was installed at facility #3 far too late in time to have served as an historical conduit for PCB releases associated with industrial operations (Haley & Aldrich, 2009). Therefore, the PCBs that were reportedly measured in the referenced pipe at facility #3 likely indicate the presence of re-suspended upstream sediments that were forced into the pipe during flooding events. The oily nature of this sample is not well-documented, but may indicate the co-occurrence of a chronic petroleum pipe discharge (as opposed to PCBs) or sheen attributed to upstream runoff. PCBs measured in the sediment and on the banks of facility #3 (e.g., MB-M12 is surface sediment from the bank of Mother Brook

failed to include critical information (all of the available samples and associated quality control results) for evaluating the accuracy and precision of the measured concentrations and, as a result, did not present a clear and unbiased picture of the relevant congener data. The report does not expressly refer to that Shaw Environmental / T&B analysis, but insofar as USGS relied on that analysis, and it appears to have done so, it unintentionally introduced a source of bias into its conclusions.

[Figure 1 of this memorandum]) likely came from upstream sources during storm events and periods of high water.

Third, the report ignores other potential sources of AR1016, AR1242, or AR1248 located along or close to Mother Brook, such as the site of a former auto salvage yard located at 56 Business Street (MADEP, 2012a) and the site of the former American Tool and Machine Company facility, currently a Boston Charter Public School, at 1415 Hyde Park Avenue (MADEP, 2012b and MADEP, 2012c). Given the fact that PCB releases at these locations are well-documented in MassDEP's public records, these PCB sources should not have been overlooked in the report. In sum, the report's selective focus on facility #3 reflects both a misinterpretation of the available data regarding that facility and a failure to take account of significant available information about facility #2 and other known PCB-impacted facilities in close proximity to Mother Brook, some of which are not even identified in the report.

III. Suggested Revisions

- Text 1.* *Abstract (page 1, paragraph 4, sentence 1). The report states: "The data suggests that widespread PCB contamination of the lower Neponset River originated from Mother Brook, a Neponset River tributary starting sometime around the early 1950s or earlier."*
- Revision 1.* *See General Comment 1 above. The report should state: "The data suggest that widespread PCB contamination of the lower Neponset River originated from upstream sources that may include the Charles River, Mother Brook, Meadow Brook, storm sewer system and other sources."*
- Text 2.* *Abstract (page 1, paragraph 4, sentence 3). The report states: "PCBs from this source area likely continued to be released after the flood and during subsequent rebuilding of downstream dams."*
- Revision 2.* *See Specific Comments 2 and 3 above. Remove this sentence, as there is no data in this report that demonstrates continued releases from the referenced source area.*

- Text 3.* Abstract (page 1, paragraph 4, sentence 5). The report states: "In addition to the continuing release of PCBs from historically contaminated bottom sediment, PCB's are still (2007) originating from source areas along Mother and Meadow Brook as well as other sources along the river and Boston Harbor."
- Revision 3.* See Specific Comment 9 above. The report should state: "The primary source of PCBs in the water column is likely historically contaminated bottom sediment."
- Text 4.* Sources of PCBs in the Neponset River Drainage Basin (page 9, paragraph 2, sentences 1 to 3). The report states: "Additional sources of PCBs in the Neponset River Basin are likely given the history of industrialization in the basin. For example, in 2007, an oil-like substance inside a pipe uncovered during the excavation of Mother Brook was found to contain PCBs at a concentration of about 320 mg/kg (Chris Poytt [sic], U.S. Environmental Protection Agency [sic], Oral Commun., 2007). Presumably, this pipe connected a different factory (facility #3; fig. 1) to Mother Brook just downstream of facility #2. Facility #3 produced oil circuit breakers along the banks of Mother Brook beginning in the 1920s (Chris Poytt, U.S. Environmental Protection Agency, Oral Commun., 2007)."
- Revision 4.* See Specific Comment 9 above. The report should state: "Additional sources of PCBs in the Neponset and Charles River Basins are likely given the history of industrialization in the basin." The second, third and fourth sentences of the above-quoted text should be deleted from the report, on the basis that the data have not been critically evaluated and came from an interested party (T&B).
- Text 5.* Relative Abundances, Concentrations, and Root-Mean-Square Difference (page 34, paragraph 1, sentences 2-3). The report states: "Substantial PCB-congener-pattern changes observed in the vicinity of facility #2 (3.0; RMSDs for upstream adjacent sample site shown in parentheses) and facility #3 (1.3) suggest the location of a major source(s) of PCBs to Mother Brook. Transport of PCBs from this source area on Mother Brook followed by deposition of PCBs in river sediments can be inferred from the low RMSD value calculated for the sample collected in Mother Brook near facility #3 and the sample collected in the river just downstream of the confluence (0.5)."
- Revision 5.* See Specific Comments 7 and 9 above. The report should state: The total PCB congener concentration is highest near Facility #2 and declines with distance downstream. While the exact source is not clear, the RMSD near Facility #2

(RMSD = 3.0) reflects elevated proportions of AR1016/1242/1248. The gradual change in the RMSD below Facility #2 (RMSD = 1.3 near Facility #3 and RMSD = 0.5 below the confluence with the Neponset River) mirrors the general decline in total PCB concentration below Facility #2 and likely reflects the dilution and mixing of AR1016/1242/1248 with the PCBs from other regional sources.”

Text 6. *Relative Abundances, Concentrations, and Root-Mean-Square Difference (page 34, paragraph 4, sentences 3 and 4).* The report states: “Similarly, the substantial PCB-congener-pattern change observed just downstream of the confluence with Mother Brook at Dana Avenue (2.3) suggests that Mother Brook is also a substantial source of PCBs to the Neponset River. The location of PCB source(s) on Mother Brook is likely somewhere in the vicinity of Reservation Park (1.6 measured in 2005 and 2.7 measured in 2002), facility #2 (1.6), and Hyde Park (1.8).”

Revision 6. *See General Comment 1 and Specific Comments 3, 4, 5, and 7.* The report should state: “The substantial PCB-congener-pattern change observed just downstream of the confluence with Mother Brook at Dana Avenue (2.3) suggests that PCB sources potentially exist within Mother Brook watershed.”

Text 7. *Cluster Analysis (page 38, paragraph 2, sentence 1).* The report states: “Cluster 1 is based on concentrations of PCBs in samples collected from the Neponset River upstream of the confluence with Mother Brook and upstream of facility #2 in Mother Brook.”

Revision 7. *See Specific Comment 9 above.* The report should state: “Cluster 1 is based on high relative abundances of pentachlorobiphenyl and hexachlorobiphenyl congeners commonly found in AR1254 and AR1260.”

Text 8. *Cluster Analysis (page 38, paragraph 4, sentence 1).* The report states: “Cluster 2 is based on samples collected from the Neponset River downstream of the confluence with Mother Brook and downstream of facility #2 in Mother Brook.”

Revision 8. *See Specific Comment 9 above.* The report should state: “Cluster 2 is based on high relative abundances of trichlorobiphenyl and tetrachlorobiphenyl congeners commonly found in AR1016, AR1242, and AR1248.”

- Text 9. Cluster Analysis (page 38, paragraph 4, sentence 5). The report states: "Therefore, data indicate that widespread PCB contamination of the downstream parts of Mother Brook, the lower Neponset River, and the Neponset River Estuary originated from Mother Brook- more specifically, from facility #2 and from facility #3 just downstream of facility #2 on Mother Brook."*
- Revision 9. See all comments above. The report should state: "The data in this report do not rule out the possibility that PCBs detected below the confluence of Mother Brook and the Neponset River are from historical inputs from the Upper Charles and Neponset River watersheds. The data suggest that sediments near facility #2, among other point and non-point sources, have been a potential ongoing source of PCBs to downstream sediments."*
- Text 10. History of PCB Contamination in the Neponset River (page 40, paragraph 2, sentence 4). The report states: "Another plausible explanation, which does not include another source area, is transformation – specifically, *in situ* anaerobic reductive dechlorination of PCBs that originated from Mother Brook and were subsequently deposited behind the Tileston and Hollingsworth and Walter Baker Dams."*
- Revision 10. The data in the report do not demonstrate the origin of anaerobically dechlorinated PCBs. Microbes likely dechlorinated a range of PCB congeners from multiple Aroclors from many sources. The report should state: "Another plausible explanation, which does not include another source area, is transformation: specifically, *in situ* anaerobic reductive dechlorination of PCBs deposited behind the Tileston and Hollingsworth and Walter Baker Dams."*
- Text 11. Summary (page 46, paragraph 7, sentence 1). The report states: "Bottom-sediment and PISCES data collected as part of this study are consistent with the hypothesis that widespread PCB contamination of the lower Neponset River (originating from Mother Brook) likely started prior to 1955, at which time catastrophic failure of dams on the river released PCB contaminated sediment downstream and into the estuary."*
- Revision 11. The data in the report reflect the presence of dissolved and re-suspended sediment particulates in the study area. Some historical insight is gained from the braded channel sediment, but otherwise, there is no data to support the sources and accumulation of sediment between 1955 and present. The report should state: "Bottom-sediment and PISCES data collected as part of this study*

are consistent with the hypothesis that the PCB contamination within the lower Neponset River started prior to 1955. Major storms and dam failures likely moved PCB containing sediment through the Charles and Neponset River watersheds to the estuary.”

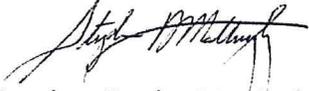
Text 12. Summary (page 46, paragraph 7, sentence 5). The report states: “In addition to the continuing release of PCBs from historically contaminated bottom sediment, it appears that PCBs are still (2007) originating from source areas along Mother and Meadow Brook as well as other areas along the river and Boston Harbor.

Revision 12. See Specific Comment 9 above. The report does not include data that support ongoing sources of any greater significance than that of storm water or CSO discharges. Therefore, the above-quoted sentence should be deleted from the report.

In sum, the above-described revisions to SIR #2011-5004 should be made in order to eliminate from the report certain erroneous statements, information from biased sources and statements that lack adequate technical support, which currently compromise the accuracy, objectivity, reliability and integrity of the report.

Please do not hesitate to call me at (781) 264-7081 if you have any questions.

Sincerely,



Stephen Emsbo-Mattingly
Senior Scientist

References

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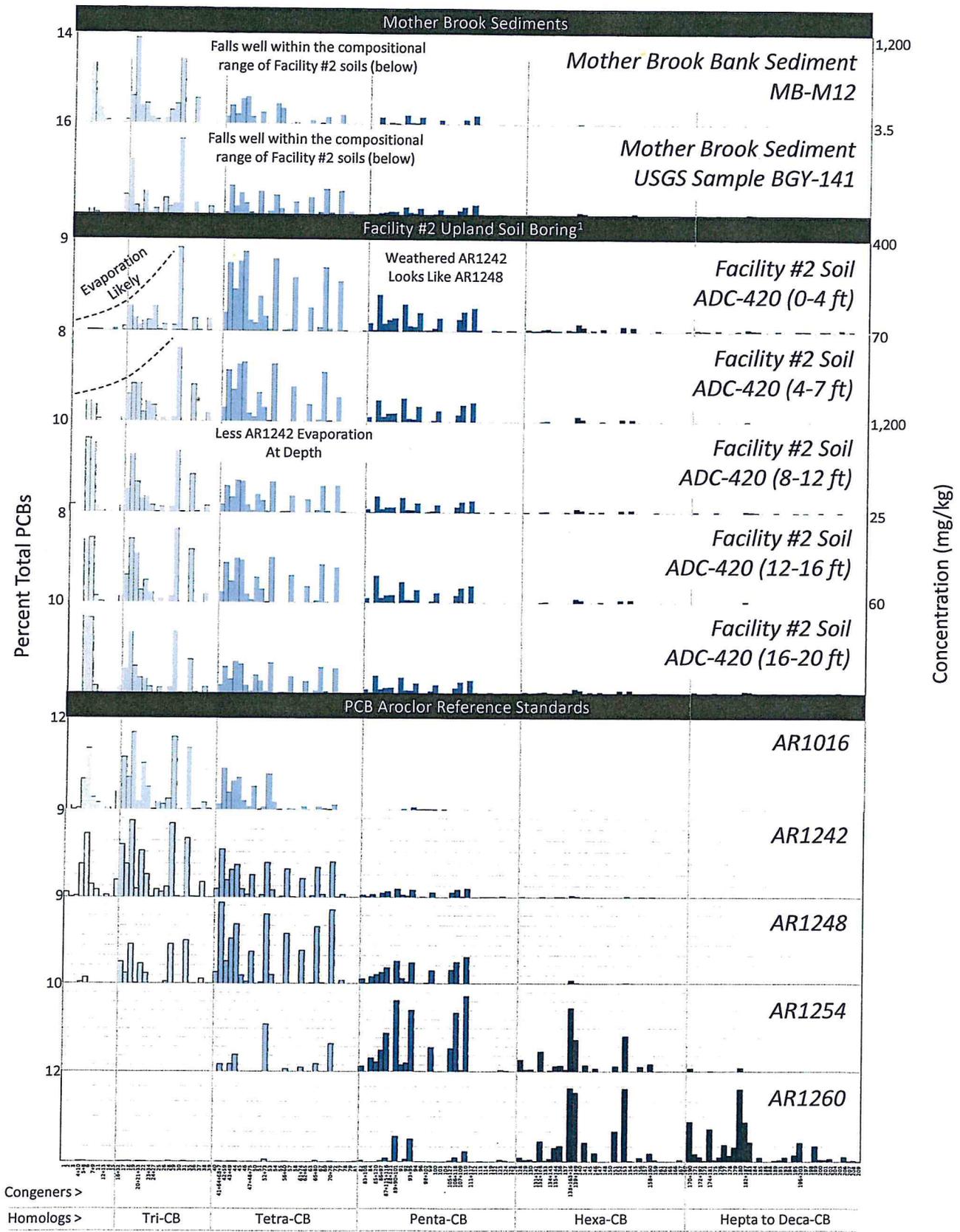
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U.S. Environmental Protection Agency. 2007. Congener data, provided via e-mail from Chris Pyott, MassDEP, to Robert Breault, USGS, on October 11, 2007 (Attachment 1).

Weiskel, P.K. 2007. Understanding the Charles River, eastern Massachusetts—scientific information in support of environmental restoration: U.S. Geological Survey General Information Product—47, 12 p.

Figure 1. Mother Brook Sediments Compared to Facility #2 Soils and Reference PCB Aroclors.



CB = Chlorobiphenyl

PCB Analytes

1 – The available information does not include the exact location of the ADC-420 soil boring; however, it was presumably collected near or under the facility #2, aluminum die casting building.

Attachment 1.

**Congener data provided from Chris Pyott to Robert Breault
Electronic mail dated October 11, 2007.**

From: "Pyott, Christopher (DEP)" <Christopher.Pyott@state.ma.us>
To: "Robert F Bready" <rbrsout@usgs.gov>
Date: 10/11/2007 02:12 PM
Subject: FW: PCB Congener Data Explained

Here is the data evaluation information.

Thanks again for your help!

From: Mitchell, John [mailto:John.Mitchell@shawgrp.com]
Sent: Wednesday, October 10, 2007 5:33 PM
To: Pyott, Christopher (DEP)
Cc: om_chopra@TNB.com; Zehntner, Roger C.; Michael Geiger; degan@rcndinc.com
Subject: PCB Congener Data Explained

Chris,

Attached you will find some definitive comparisons between the congeners present in the L.E.Mason PCBs and the congeners present in the highest PCB concentration sample from the supermarket/Allis Chalmers property (sample MB-M12). These comparisons show that the L.E. Mason PCBs and the supermarket/Allis-Chalmers PCBs are from different sources.

The first attached table shows that, for each listed congener ratio in the left hand column, the ratio of the first congener to the second congener for each listed ratio is markedly different for the L.E. Mason PCBs than for the supermarket/Allis-Chalmers property PCBs.

The second table shows that, for each specific congener listed in the left hand column, the percentage of each listed congener contained in the L.E.Mason PCBs is markedly different than the percentage of that same congener in the supermarket/Allis-Chalmers PCBs.

The last figure compares the total congener composition of the of the supermarket/Allis-Chalmers sample with a similar concentration sample from the L.E. Mason site (sample ADC420 8-12). If the two samples were a match, all data points would fall along the diagonal line that is shown in the figure. Consistent with the tables above, these data show that the L.E. Mason PCBs and the supermarket/Allis Chalmers PCBs are not same.

These analyses thus show that the supermarket PCBs clearly originate from a different source. That source undoubtedly is the Allis-Chalmers circuit breaker manufacturing operations which were formerly conducted on the supermarket property and which involved the extensive use of PCB insulating oils. Thomas & Betts should not be required to investigate and remediate what are undoubtedly Allis-Chalmers PCBs originating from the supermarket property.

We'll call you in the AM to discuss.

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**Congener Analysis Comparison
of L.E. Mason PCB Samples
and The Highest Concentration
Supermarket/Allis-Chalmers
Property PCB Sample**

Table 1

Congener Ratios ¹	Ratio of First Congener To Second Congener			
	L.E. Mason PCBs ²			Supermarket/Allis-Chalmers Sample (MB-M12)
	Max	Min	Mean	
66/95	3.7	2.6	3.1	1.0
(70+74)/95	4.6	3.5	4.1	1.9
71/138	5.3	3.6	4.5	6.6

Table 2

Congener	Percentages of Specific Congeners In Each Sample Set			
	L.E. Mason PCBs			Supermarket/Allis-Chalmers Sample (MB-M12)
	Max	Min	Mean	
17	7.3	1.1	4.9	12.5
28	6.6	7.7	7.2	9.6
52	3.6	6.7	4.8	3.2
138	.59	.31	.40	.26

¹ Based on Ballschmitter and Zell congener numbers.

² The L.E. Mason PCB samples consist of five soil boring samples and one oil sample from an underground storage tank. The maximum, minimum and mean ratios are listed for these samples.

Comparison of Congener Composition in Samples ADC420 8-12 and MB-M12

